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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HASHEM, LISA

ART UNIT PAPER NUMBER

2614

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/932,870

Applicant(s)

BUFFMIRE ET AL.

Examiner

Lisa Hashem

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**FINAL DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,285,858 by Yoshida and in further view of U.S. Patent Application No. US 2002/0128769 by Der Ghazarian et al, hereinafter Der Ghazarian.

Regarding claim 1, Yoshida discloses a radio communications system (Fig. 2; Fig. 4) comprising:

- a) an intrinsic pavement transmitter and antenna (Fig. 2, 26; Fig. 4, 52) for conducting radio frequency signals (col. 3, lines 11-27);
- b) a first transmitter/receiver, at a first point along the intrinsic pavement transmitter and antenna (Figs. 2, 4: 30); and
- c) a second transmitter/receiver (Figs. 2, 4: 16, 42, 44), at a second point along the intrinsic pavement transmitter and antenna, and in communication with an end-user (e.g. driver of vehicle);

wherein the intrinsic pavement transmitter and antenna conducts radio frequency signals between the first and second transmitter/receiver entirely within the pavement transmitter and antenna (col. 2, line 40 – col. 3, line 27; col. 3, lines 50-61).

Art Unit: 2614

Yoshida discloses the second transmitter/receiver in communication with an end user and a first transmitter/receiver. However, Yoshida does not disclose the first transmitter/receiver in communication with an end-user.

Der Ghazarian discloses an Electronic Vehicle Monitoring System comprising:

- a) a RF electromagnetic Transceiver unit (see Figure 2, 30; page 5, section 0058, lines 18-21); a first transmitter/receiver or parking space transceiver unit (Figure 2, 22), at a first point along a parking space, and in communication with an end-user or employee of a vehicle dealership using computer (page 1, section 0003, lines 1-18; Figure 2, 21); and
- c) a second transmitter/receiver or vehicle transceiver unit (Figure 2, 23), at a second point along the parking space, and in communication with an end-user or driver of the vehicle (page 4, section 0040, lines 1-21);

wherein the RF electromagnetic Transceiver unit conducts radio frequency signals between the first and second transmitter/receiver (page 5, section 0058, lines 18-21; page 6, section 0060, line 1 – section 0064, line 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Yoshida to include a first transmitter/receiver in communication with an end-user as taught by Der Ghazarian. One of ordinary skill in the art would have been lead to make such a modification to provide an end-user to operate the first transmitter/receiver and provide communication between two end-users via radio frequency signals through an intrinsic pavement transmitter and antenna.

Art Unit: 2614

Regarding claim 2, the radio communications system of claim 1, wherein Yoshida further discloses the second transmitter/receiver (e.g. antenna) is coupled to the end-user with a hard wire (e.g. on-board unit) (col. 3, lines 11-16).

Regarding claim 3, the radio communications system of claim 1, wherein Yoshida further discloses the second transmitter/receiver is a conductive surface portion of the intrinsic pavement transmitter and antenna (col. 3, lines 11-21).

Regarding claim 4, the radio communications system of claim 1, wherein Yoshida further discloses the first transmitter/receiver is adjacent to the intrinsic pavement transmitter and antenna (col. 2, line 65 – col. 3, line 2; col. 3, lines 53-61; Figs. 2, 4: 30).

Regarding claim 5, the radio communications system of claim 1, wherein Yoshida further discloses the first transmitter/receiver is located in the intrinsic pavement transmitter and antenna (col. 1, lines 55-67; col. 2, line 65 – col. 3, line 2; col. 3, lines 53-61; Figs. 2, 4: 30).

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 6, 7, and 10-15 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Yoshida.

Regarding claim 6, Yoshida discloses an intrinsic pavement transmitter and antenna, comprising a roadway (Fig. 3, 24), including:

Art Unit: 2614

a) a suitable wearing course material (e.g. road surface); and  
b) an effective amount of radio frequency conductive material (Fig. 5, 52'), sufficient to conduct radio frequency signals,  
between at least two locations within the pavement (Fig. 4, 52; Fig. 4, 30),  
such that the radio frequency signals are conducted entirely within the pavement transmitter and antenna (col. 3, line 11 – col. 4, line 27).

Regarding claim 7, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida further discloses the radio frequency conductive material is at least one member selected from a group consisting of: radio frequency transmittable polymers, metal shavings, metal dust, and conductive carbons (col. 3, line 52 – col. 4, line 27).

Regarding claim 10, the intrinsic pavement transmitter and antenna of claim 7, wherein Yoshida further discloses the metal shavings are at least one member selected from a group consisting of: iron, iron alloys, aluminum, aluminum alloys, copper, and copper alloys (col. 3, line 62 – col. 4, line 18).

Regarding claim 11, the intrinsic pavement transmitter and antenna of claim 7, wherein Yoshida further discloses the metal dust is at least one member selected from a group consisting of: iron, iron alloys, aluminum, aluminum alloys, copper, and copper alloys (col. 3, line 62 – col. 4, line 18).

Regarding claim 12, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida discloses the suitable wearing course material (e.g. road surface) is at least one member selected from a group inherently consisting of: asphalt and concrete (Fig. 3, 24; col. 1, lines 55-60).

Regarding claim 13, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida further discloses the conductive material is intermixed with the wearing course material (Fig. 3, 24; Fig. 4, 52; col. 1, lines 55-60; col. 3, line 61 – col. 4, line 27).

Regarding claim 14, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida further discloses the conductive material and the wearing course material are substantially distinct layers (Fig. 3, 24; Fig. 4, 52; col. 1, lines 55-60; col. 3, line 61 – col. 4, line 27).

Regarding claim 15, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida further discloses an insulating layer proximate the roadway (Fig. 4, 52).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida, as applied to claim 6 above, and in further view of U.S. Patent No. 3,962,142 by Freeman et al, hereinafter Freeman.

Regarding claim 8, the intrinsic pavement transmitter and antenna of claim 6, wherein Yoshida discloses a radio frequency conductive material (col. 3, line 62 – col. 4, line 27). However Yoshida does not disclose (a) the conductive carbon is at least one member selected from a group consisting of carbon black, carbon fiber, graphite and coke breeze.

Freeman discloses electrically conducting concrete (see Abstract) comprising: a settable composition for use as a structural material comprising a bonding material and an aggregate, wherein said aggregate contains electrically conducting material comprising a quantity of relatively large electrically conductive particulate material and a quantity of relatively small electrically conductive particulate material (column 1, lines 46-55). Wherein (a) the conductive carbon is at least one member selected from a group consisting of carbon black, carbon fiber,

Art Unit: 2614

graphite and coke breeze (see Examples 1-7 in columns 3-4); (b) the suitable wearing course material is at least one member selected from a group consisting of: asphalt and concrete (column 7, lines 52-66); and (c) the conductive material is intermixed with the wearing course material (column 7, lines 52-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the intrinsic pavement and transmitter of Yoshida to include conductive carbon as taught by Freeman. One of ordinary skill in the art would have been lead to make such a modification since the conductive carbon will provide an electrically conducting roadway.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida, as applied to claim 7 above, and in further view of U.S. Patent No. 5,460,649 by Strassman.

Regarding claim 9, the intrinsic pavement transmitter and antenna of claim 7, wherein Yoshida discloses a protective resin film is used to cover the outer tube (Fig. 4, 56; col. 3, line 62 – col. 4, line 18).

However, Yoshida does not disclose the radio frequency transmittable polymers include: polyacetylene, polyaniline, polypyrrole, polythiophenes, polyethylenedioxythiophene and poly(p-phenylene vinylene)s.

Strassman discloses a fiber-reinforced rubber asphalt composition (see Abstract) comprising: composition that is more durable, longer lasting, more resilient, and less prone to cracking. Wherein fibrous materials employed in the composition are preferably synthetic organic fibers. Examples of suitable polyester fibers include: poly(ethylene terephthalate), poly(1,4-cyclohexanemethylene terephthalate), poly(vinyl acetate), poly(methyl acrylate), poly



Art Unit: 2614

(methyl methacrylate), and poly(hexamethylene fumarate) (column 2, lines 52-64; column 5, line 61 – column 6, line 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the intrinsic pavement transmitter and antenna of Yoshida to include radio frequency transmittable polymers as taught by Strassman. One of ordinary skill in the art would have been lead to make such a modification since a fiber-reinforced rubber asphalt composition will provide an electrically conducting roadway.

### *Response to Arguments*

7. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed 9-7-06 with regards to claims 1-15 have been fully considered but they are not persuasive.

9. Applicant argues that Yoshida does not teach '...the RF signal between the antennas 26 or between the terminator 60 and control unit 30 is conducted solely through the roadway material...' and Yoshida discloses '...the RF signal is not transmitted through the pavement using the pavement as the conducting medium, but the RF signal is transmitted between the antennas 26 using the wired coupling...'. Examiner disagrees. Examiner interprets the limitations in claim 1 '...the intrinsic pavement transmitter and antenna conducts radio frequency signals between the first and second transmitter/receiver entirely within the pavement transmitter and antenna...' and in claim 6 '...radio frequency signals are conducted entirely within the pavement transmitter and antenna...' as broad limitations. Neither of the claims state that the RF

Art Unit: 2614

signals cannot be transmitted via wired coupling. However, Yoshida clearly discloses RF signals are transmitted via radio communication (col. 3, line 11 – col. 4, line 27).

Yoshida clearly discloses the intrinsic pavement transmitter and antenna (Fig. 2, 26; Fig. 4, 52) conducts radio frequency signals or radio communication link between the first transmitter/receiver (Figs. 2, 4: 30) and the second transmitter/receiver (Figs. 2, 4: 16, 42, 44) within the pavement transmitter and antenna (col. 3, lines 19-27), wherein the intrinsic pavement transmitter and antenna is embedded within a road surface and communication is through the roadway material, wherein the second transmitter/receiver (Figs. 2, 4: 16, 42, 44) faces the road surface whereby said transmitter/receiver can establish radio communication with the intrinsic pavement transmitter and antenna (col. 3, lines 11-27).

Thus, Yoshida clearly discloses the claimed limitations.

### *Conclusion*

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2614

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 Form.

12. Any response to this action should be mailed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Or faxed to:**

(571) 273-8300 (for formal communications intended for entry)

**Or call:**

(571) 272-2600 (for customer service assistance)

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (571) 272-7542. The examiner can normally be reached on M-F 8:30-5:30.

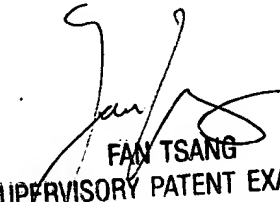
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

Art Unit: 2614

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lh

November 16, 2006

  
FAN TSANG  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600